Faculty Working Papers

THE ECONOMIC STATUS OF WOMEN:

CROSS CULTURAL COMPARISONS

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Introduction

The participation of women in the U.S. Labor force has been in-
creasing continuously and, in recent years, at an accelerated rate. In
1870 only 15% of the labor force was female, by 1940 it was 26% by 1970
is was 37%.** But this is still well below their proportion in the
population. Furthermore, the average income of all women as compared to
men has remained at 33% for at least two decades.***

These developments have generated a great deal of interest, and
a good deal of work has been done attempting to evaluate whether the
economic status of women in this country has been improving and why it
has not been improving more rapidly. Some of the important questions
that arise in this context are:

1. Must women's participation in the labor force necessarily
    be lower than men's, and must they consequently always consti-
    tute a minority of the labor force?

2. Are women inherently better suited to certain types of jobs and
    less to others than men?

**Census data

***Statistical Abstract of the U.S. 1972, p. 327

3. Is the concentration of women in "women's ghettoes" increasing as more women are moving into the labor force?

4. Are women handicapped by an inadequate amount of education?

5. Is the ratio of women's to men's earnings more or less immutable, at least in the short run?

The problem with most of the literature on this subject is that it has concentrated entirely on the situation in the U.S. This study emphasizes the use of data from other countries, determining similarities and differences among them, and particularly between them and the U.S., in order to shed further light on the questions raised above. The underlying hypothesis is that significant variations among countries point to the absence of fundamental and inherent characteristics of men and women as the determinant of the economic status of women.

Sources

Since comparisons between various countries are the basis of most of this paper, it is important to use data which, in so far as possible, are comparable. The best source from this point of view are UN publications and these constitute our main source. For the U.S., census data were also used where additional information was required. For other countries, other sources were used only to a very minor extent.

Since in many instances comparisons refer to relationships within a single country the fact that the data used, generally the most recent available, refer to different years for different countries, is irrelevant for the analysis. Hence the years are shown only where they are important

Data and Analysis

Participation in the Labor Force. Considerable variations exist among countries in the proportion of men who are economically active

according to the published statistics. Part of the explanation for this
is that the age groups included vary, as does the treatment of such cate-
gories as unpaid family workers, part-time workers and the unemployed.
Variations also occur in the average age when young people enter and
older people leave the labor force, causing real differences in the rate
of participation.

Of the countries for which data are available* the lowest labor for
participation rates for men were 65% in Macao, 75% in the Canal Zone and
77% in Martinique. The highest rates were 98% for South West Africa and
Mali, and 99% for Niger. The range for advanced industrialized countries
was less. The lowest rates were 80% for Israel, 82% for France, 84% for
Canada, the highest 93% for Spain, Denmark, and Hungary. The rate for
the U.S. was 86%.

For women the range was from a negligible participation--3% in Iraq
4% in Libya and 5% in Jordan--to roughly equal with that of men, 86% in
Guinea, 93% in Mali and 98% in Niger. Again the variation was less for
advanced industrialized countries. The lowest rates were 18% for Portugal
19% for Spain and 26% for the Netherlands, while the highest rates were
62% in the German Democratic Republic, 66% in Bulgaria and 74% in Romania.
The figure for the U.S. was 39%.

While, as we shall see later, there is considerable variation in
the role women play in various economies, much of the larger variation

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* UN Compendium of Social Statistics, 1967. Dates vary between 1946
an 1964, but in most cases are for the early sixties.

in women's participation in the labor force occurs because a greater proportion of women tend to be part-time workers and workers in family enterprises, categories which are included in the economically active popultaion in some countries but excluded in others. Relevant data are shown in Table 1.

In the underdeveloped countries where agriculture is the dominant sector and much of it consists of small family enterprises, women are in some cases largely counted as self-employed. In others they are counted as unpaid family workers, and in some countries they are not included in the labor force at all. In Thailand and Botswana, for instance, women make up more than 50 percent of the self-employed in the agricultural sector, in Bulgaria more than 40 percent, while the proportion of women among family workers is considerably lower. In fact Bulgaria has no such category. In other countries women constitute a far larger proportion among family workers than among self-employed. In one country, Canada, no women are counted as self-employed! In a third group, chiefly consisting of Moslem and some Latin American countries women constitute a negligible proportion of both the self-employed and family workers.

The tendency to relegate women to different categories when there appears to be de facto partnership is also seen when comparing data for self-employed and family workers in commerce in various countries. In Eastern Europe women often constitute a large proportion of the self-employed. Bulgaria and Czechoslavakia, for instance, have no category for family workers. In Canada the situation is quite different. A significant number of family workers is female but none are male. The implication is that there is not a single family-owned business where the husband, the father or even the son is anything less than self-employed.

Table 1

Percentage of Women in Agriculture and Commerce
and Self-employed and Family Workers
in Each Category*

	Agriculture				Commerce		
Country	Percent of labor force	Percent of self-employed	Percent of family workers	Country	Percent of labor force	Percent of self-employed	Percent of family workers
Algeria	1.8	.9	8.7	Libya	.8	.6	2.0
Costa Rica	1.8	.5	.9	Algeria	2.5	.8	2.0
Libya	2.1	.5	9.9	U.A.R.	6.0	5.9	11.0
Br. Honduras	4.8	4.9	12.1	India	10.7	11.5	96.7
Argentina	5.7	3.3	17.4	Costa Rica	17.8	10.8	25.2
U.A.R.	6.1	1.4	12.3	Botswana	18.3	12.9	25.0
Canada	13.2	0	43.0	Argentina	18.6	10.8	99.4
U.S.	17.9	4.5	69.2	Italy	28.6	26.1	48.3
Spain	19.5	8.3	47.3	Br. Honduras	29.6	15.1	54.2
Philippines	21.3	4.2	42.2	Israel	33.7	10.4	86.6
Sweden	22.7	4.4	71.9	Liberia	34.1	37.5	92.7
Israel	24.1	15.1	69.6	Spain	34.5	23.2	73.7
Italy	26.3	9.8	43.5	Canada	37.6	13.5	100.0
Finland	35.3	13.1	69.6	Bolivia	42.6	38.4	82.1
India	35.6	24.2	29.2	U.S.	43.4	22.4	90.2
Ghana	36.5	35.9	53.3	Bahamas	44.8	39.9	57.1
Hungary	37.5	23.2	75.5	Japan	45.2	29.4	79.0
Liberia	41.6	17.8	76.6	Sweden	48.2	21.7	82.5
Czechoslovakia	49.5	32.7	73.4	Austria	51.0	38.7	80.9
Thailand	50.8	99.4	68.3	Bulgaria	52.2	18.0	
Japan	51.4	18.0	78.3	Hungary	52.2	57.6	55.7
Botswana	52.3	55.0	30.2	Thailand	53.4	44.1	74.7
Austria	53.0	28.6	76.0	Finland	55.1	34.5	82.0
Bulgaria	54.7	43.9		Philippines	57.1	63.6	76.1
Bolivia	59.1	12.8	71.7	Czechoslovakia	59.5	29.6	
				Ghana	74.3	82.6	86.9

*Based on data in UN Yearbook of Labor Statistics, 1970

No doubt there are some real differences in life-style associated
with these extreme variations. In some countries women do most of the
agricultural work, or most of the trading, while men tend to be employed
in mining and industry. In other countries the activities of women are
largely confined to house and yard. Yet the basic problem appears to be
that where a married couple, say, runs a family farm, the husband perhaps
feeding the cattle while the wife feeds the chickens, ideology dictates
whether the wife is considered self-employed (as the husband is), an unpaid
family worker, or is not included at all in the labor force.

Proportion of women in the labor force. As would be expected from the
foregoing the proportion of the labor force that is female varies widely
among   different countries, as seen in Table 2. The countries included
here were chosen from among those for which data are available so as to
represent a variety of existing conditions: economically developed
and underveloped, capitalist, mixed and socialist, European, Asian, African
and American. There is not only great variation among different countries
in general, but also among developing countries, among   advanced in-
dustrialized countries and even among Soviet type countries. The only
possible generalization is that the representation of women is very
low in Moslem countries. One might consider the Spanish-speaking countries
the next lowest group .*

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*Bolivia, with a mainly Indian rather than Spanish tradition, is quite
different

Since one single category, agriculture*, plays a dominant role in the less developed economies and there is no commonly accepted approach to who in this sector should be included in the labor force, this area deserves special attention. Given the arbitrary variations between countries, one solution is to exclude agriculture. Hence, Table 2 also shows women as a percentage of the labor force excluding agriculture. In comparing the two columns we see that the percentage of women tends to be higher without agriculture than for the labor force as a whole when the latter is very low, and vice-versa for countries where women constitute a high proportion of the total labor force. By and large, however, the ranking of the countries is not dramatically changed. The rank correlation co-efficient between Columns (2) and (3) is .67.

To the extent that the same problem of capricious treatment of workers in family enterprises exists in other sectors than agriculture, especially commerce, in some countries, it seems worthwhile to look at the proportion of women in the labor force when all unpaid family workers are excluded, as shown in Column (4), Table 2. In eighteen countries the percentage of women becomes smaller, though extreme variations are seen only in Bolivia, Liberia and Thailand. In five countries the percentage remains essentially unchanged; in Botswana, British Honduras and Costa Rica it increase slightly. The rank correlation between Columns (2) and (4) is .71.

The fact that the proportion of women in the labor force virtually equals that of men in at least some countries and that there are extreme variations even when agriculture or family workers are excluded leads to the conclusion that it is the attitude of society rather than women's limitations that determines the extent of their participation.

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*This category also includes forestry, hunting and fishing, but they are relatively minor.

Table 2

Women as a Percentage of the Labor Force*

(1) Country	(2) Total labor force	(3) Excluding agriculture, forestry, hunting and fishing	(4) Excluding family workers
Algeria	4.4	7.7	4.0
Libya	5.1	6.9	3.0
U.A.R.	7.9	10.3	7.0
Costa Rica	16.3	33.8	17.7
British Honduras	18.1	26.6	22.0
Argentina	21.8	25.2	21.8
Spain	24.0	25.4	20.1
Italy	24.8	24.2	22.9
Israel	29.6	33.0	27.5
India	31.5	20.6	31.6
Philippines	32.1	46.7	30.8
Canada	32.3	33.8	30.3
Sweden	33.6	35.1	32.2
Hungary	35.1	33.6	30.8
Liberia	36.0	12.3	13.9
U.S.	36.3	37.1	35.7
Ghana	38.2	40.7	35.8
Bahamas	38.7	40.6	38.5
Japan	38.9	34.9	29.8
Finland	39.4	41.6	34.1
Austria	40.4	36.6	34.9
Czechoslovakia	41.0	38.2	40.8
Bulgaria	44.0	35.5	44.0
Thailand	48.4	37.2	20.9
Botswana	49.9	27.1	50.5
Bolivia	50.9	36.5	28.2

*Based on data in UN Yearbook of Labor Statistics, 1970

Distribution of Women by Industry. Table 3 shows the proportion of
workers who are women in various industries for each country. Obviously
some industries are largely male, namely, "mining and quarrying", "construc-
tion," "electricity, water, gas, and sanitary services" and "transport,
storage and communications." However, even for these industries the highest
percentage of women is 25%, 13%, 26%, and 24%, respectively.*
Only one industry can   possibly be considered largely female, namely,
services. But even here, in one country (Libya) women are only 6% of the
total, women constitute less than 50% in thirteen countries, and the pro-
portion of women in services is lower than in the labor force as a whole
in eight countries.

The most striking fact from Table 3 is the great variation in
patterns between different countries. Almost all rank far higher for some
industries than for others.**

Distribution of Women by Occupation. Table 4 shows the proportion
of female workers in various occupations for each country. On the whole,
the picture that emerges   resembles   that   presented by Table 3.
Two occupations, which largely coincide with predominantly male industries,
predictably turn out to be chiefly male, "miners, quarrymen and related
workers" and "workers in transportation and communication occupations."

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*It is interesting to note that 3.8% of the female labor force is in
"mining and quarrying" in Bolivia, 1.3% in Czechoslovakia, 1.1% in Bulgaria,
Only .9% of the male labor force in the U.S. is in this industry.

**The coefficient of concordance is .72, which is fairly high, but much
of this is explained by the fact that there is a considerable similarity
in pattern of distribution of countries that are European or largely pop-
ulated by people of European background. The coefficient of concordance
for Argentina, Austria, British Honduras, Bulgaria, Canada, Costa Rice,
Czechoslavakia, Finland, Hungary, Israel, Italy, Spain, Sweden and the
USA is .90.

Table 3. Percentage of Women in Various Industries by Country*

Country	Agriculture, forestry, hunting, & fishing	Mining and quarrying	Manufacturing	Construction	Electricity, water, gas & sanitary services	Commerce	Transport, storage, & communications	Services
1. Algeria	1.8⁻	1.9	8.9	.5	3.9	2.5	2.6	15.3
2. Argentina	5.7	2.7	20.7	1.3	3.5	18.6	4.7	52.0
3. Austria	53.0	6.9	35.5	5.8	10.2	51.0	12.5	57.6
4. Bahamas	(1)	(1)	33.3	1.1	4.3	44.8	13.5	60.2
5. Bolivia	59.1⁺	9.6	41.1	3.3	24.7	42.6	3.7	74.8⁺
6. Botswana	52.3	3.5	29.6	1.0	0⁻	18.3	2.4	47.9
7. British Honduras	4.8	0⁻	13.7	.7	1.6	29.6	3.8	55.7
8. Bulgaria	54.7	15.4	39.4	8.8	16.5	52.2	17.2	41.9
9. Canada	13.2	0⁻	21.7	4.5	14.9	37.6	17.4	53.9
10. Costa Rica	1.8	1.3	23.6	1.5	5.0	17.8	4.3	60.8
11. Czechoslovakia	49.5	12.4	40.1	12.6⁺	26.2⁺	59.5	23.6⁺	53.5
12. Finland	35.3	10.3	37.0	5.8	13.5	55.1	20.6	70.4
13. Ghana	36.5	5.2	42.0	3.1	1.3	74.3⁺	1.3	20.0
14. Hungary	37.5	7.9	36.4	10.1	20.9	52.2	17.5	53.4
15. India	35.6	18.7	27.1	11.8	24.9	10.7	2.2	21.0
16. Israel	24.1	(1)	(1)	2.1	9.1	33.7	11.1	48.1
17. Italy	26.3	1.4	27.8	1.0	5.8	28.6	7.4	41.4
18. Japan	51.4	11.1	34.3	11.8	9.8	45.2	14.0	43.1
19. Liberia	41.6	2.6	29.3	1.5	2.4	34.1	2.5	14.9
20. Libya	2.1	.4	8.8	.6	1.4	.8⁻	4.1	6.0⁻
21. Philippines	21.3	0⁻	53.3⁺	1.7	4.5	57.1	3.5	55.0
22. Spain	19.5	1.0	23.8	1.1	5.0	34.5	6.2	44.3
23. Sweden	22.7	7.4	23.6	4.0	10.3	48.2	19.0	63.1
24. Thailand	50.8	25.2⁺	37.6	9.2	5.1	53.4	5.5	30.1
25. UAR	6.1	.6	3.5⁻	.4⁻	.8	6.0	1.0⁻	17.8
26. USA	17.9	6.5	28.7	4.9	11.9	43.4	23.5	55.3

*Based on data in UN Yearbook of Labor Statistics, 1970

⁻Lowest percentage

⁺Highest percentage

(1) Data not available

Table 4. Percentage of Women in various occupations by country*

Country	Professional, technical, and related workers	Administrative, executive, and managerial workers	Clerical workers	Sales workers	Farmers, fishermen, loggers, and related workers	Miners, quarrymen, and related workers	Workers in transportation and communication occupations	Craftsmen, production process workers and laborers n.e.c.	Service, sports, and recreation workers
1. Algeria	20.9	6.0	11.6	1.3	1.8	0⁻	.1	4.0	13.3
2. Argentina	58.7	7.4	28.9	16.9	5.2	0⁻	1.2	15.8	62.2
3. Austria	40.2	28.2	60.9	55.7	53.2	2.3	8.5	22.7	72.7
4. Botswana	39.1	5.1	18.8	18.8	52.5	3.5	2.6	9.2	56.6
5. British Honduras	65.9⁺	5.4	32.4	32.7	4.8	0⁻	.6	10.3	60.3
6. Bulgaria	42.2	(1)	(1)	58.8	58.1	7.9	8.2	36.9	58.9
7. Canada	42.8	12.9	69.8	38.0	12.6	0⁻	11.9	12.7	62.0
8. Costa Rica	56.1	10.7	27.3	18.7	1.6⁻	0⁻	0⁻	15.7	69.6
9. Czechoslovakia	34.6	4.6	68.8	56.4	55.6	10.1	16.4	30.0	66.2
10. Finland	48.1	9.0	79.5⁺	60.5	35.4	2.0	18.4⁺	24.5	79.9⁺
11. Ghana	19.7	3.1	7.4	80.4⁺	36.9	5.2	2.6	25.9	29.1⁺
12. Hungary	39.2	17.6	61.5	54.2	41.4	3.0	12.1	24.5	58.8
13. India	16.1	2.7	2.9	11.3	35.7	19.0	1.0	27.4	25.0
14. Israel	45.7	(1)	(1)	31.7	23.8	3.0	4.1	17.9	50.8
15. Italy	42.2	28.4	30.2	28.3	26.5	.3	3.5	18.6	40.5
16. Japan	36.0	5.6	43.8	43.7	51.5	5.6	12.4	28.5	58.3
17. Liberia	36.6	9.1	12.8	35.1	42.6	3.1	2.0	3.4⁻	12.7
18. Libya	11.5⁻	.6⁻	1.3⁻	.7⁻	2.5	0⁻	.5	11.6	5.8⁻
19. Philippines	52.8	53.2⁺	26.3	60.0	21.4	0⁻	.8	40.8⁺	64.0
20. Sweden	39.9	9.0	71.4	48.5	22.6	.3	17.4	14.7	71.6
21. Thailand	33.9	9.7	13.3	55.8	50.8	26.3⁺	4.5	33.0	44.3
22. UAR	22.3	4.8	4.6	5.6	3.5	0⁻	.5	3.5	14.9
23. USA	37.5	15.9	74.7	43.6	17.5	(1)	(1)	3.6	65.9

*Based on data in U.N. Yearbook of Labor Statistics, 1970
(1) Data nor available
-Lowest percentage
+Highest percentage

Again we find that in at least some countries the proportion of women is as high in these occupations as 26% and 18%, respectively. Again the category that emerges as mostly female is "services, sport and recreation workers", women constituting a majority in fifteen of twenty-three countries. Once again countries that rank low in some occupations rank quite high in others.*

While these data show that it is possible for women to participate in all major categories of industries and occupations, a more detailed breakdown than the one used here would no doubt reveal some single-sex categories. It is also true that the nature of the same occupation varies with the level of technological advancement. Nevertheless, the great variations in the pattern of distribution we find in the large categories for which data are available points to the conclusion that, on the one hand, a substantial proportion of women are doing work regarded as suitable only for men in some countries, and that, on the other hand, women in some countries are excluded even from employment generally regarded as "female" elsewhere.

Further evidence of the erratic determination of "male" and "female" work is the fact, for instance, that in Ghana and India women constitute about thirty-six percent in agriculture and only about twenty percent in services, while in Costa Rica less than two percent of workers in agriculture are women but more than sixty percent in services. Or again, in

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*The coefficient of concordance is .41; for European countries and countries largely populated by people of European ancestry it is .76.

Costa Rica fifty percent of professional, technical and kindred workers
are women, but only twenty percent of sales workers, while in Ghana the
percentages are twenty and eighty, respectively.

The conclusion is inescapable that the determination of what work
is suitable for men and for women has little to do with their objective
ability to perform the necessary tasks. A variety of cultural factors
probably play a large part. It is interesting to note, for instance, that
in no European country, nor any country settled largely by Europeans, do
women constitute less than forty percent in the service industry or less
than twenty-five percent among clerical workers. Also noteworthy is that
no Moslem country has a high proportion of women in any industry or occu-
pation.

Women in the Professions. While only sketchy data are available
on the participation of women in the leading professions in different coun-
tries (see Table 5),   they are interesting because they show that women
do constitute a moderate to high percentage in several professions in a
number of countries. This is in striking contrast to the situation in
the U.S., which has the smallest female participation in all categories
except engineers and university faculties. Moreover, the respectable show-
ing in the U.S. for women on university faculties is mainly due to the high
participation of women in sectors of higher education more or less
unique to the U.S., namely junior and four-year colleges with no
graduate faculties, and such fields   as   home

Table 5

Percentage of Women in Various Professions*

Country	University faculty	Physicians **	Dentists	Pharmacy	Lawyers	Engineers	Parliament
Austria	8.0						
Canada	13.2				10.0		
Denmark		16	70				
Finland	17.7		77	85.8	9.6	3.6	17
France	20.6	13	25				
Germany (F.R.)	2.3	20	13				8
Great Britain	10.8	16	7	33.0	5.0	.4	4
India		12	4				
Italy		19					
Japan		9	3				
Norway	1.7		20	92.3		.6	9
Philippines		25					
Poland		30	77		18.8	8.0	
Sweden	10.0	15	25	68.9	7.5		14
Switzerland		14			7.5		
U.S.A.	20.0		2	11.9	2.8	1.6	2
U.S.S.R.		65	83		37.0	32.0	28

*Data from Galenson, Marjorie, Women and Work, an International Comparison.

**Soutces: N. T. Dodge, Women in the Soviet Economy, The Johns Hopkins Press, Baltimore, 1966; John B. Parrish, "Women in Medicine: What can International Comparisons Tell Us?" The Woman Physician, Vol. XXVI, No. 7, July 1971; U.S. Department of Commerce, Bureau of the Census, 1970 Census, Earnings by Occupation and Education.

economics, physical education, etc. A more reasonable comparison would be to count only faculties in the traditional fields at universities, not colleges, which would reduce the proportion of females to about 5 percent.

These data raise questions with the assumption that women are congenitally unable or unwilling to succeed in the demanding, prestigious and highly rewarded professions.

Concentration of Women in the Labor Force. While we have shown that the pattern of distribution of women in the labor force varies considerably among different countries, it is also clear that in most cases women tend to be heavily concentrated in a few sectors. Such crowding might well reduce incomes for women,* and increasingly more so as the proportion of women in the labor force increases. For this reason it is important to determine whether an influx of women tends to be associated with an increasing degree of concentration in the "female" sectors.

A simple measure of the degree to which women are concentrated in "female" industries or occupations rather than distributed proportionately throughout the labor force is used in this study. We take the percentage of the labor force that is female, compute the number of women that would be in each industry, or occupation, if the percentage were the same for each of them. Using only those categories where the actual number of women is higher, we subtract the computed number, thus deriving the total number of women who would have to change jobs in order to be evenly represented in all areas. Dividing the number of women that would need to shift by the total number of women in the labor force gives us a measure of concentration. One such index was obtained for industries, another for occupations. In algebraic terms:

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*Barbara Bergmann, "The effect on white incomes of discrimination in employment," Journal of Political Economy, March/April, 1971.

Let L_{w_i} = number of women in industry (occupation) i

L_{m_i} = number of men in industry (occupation) i

$L_i = L_{w_i} + L_{m_i}$ = the labor force in industry (occupation) i

L_w = total number of women in the labor force

L_m = total number of men in the labor force

$L = L_w + L_m$ = the labor force

Then $\dfrac{L_w}{L}$ = proportion of the labor force that is female

$$L_{w_i}^e = \frac{L_w}{L}(L_{w_i}^e + L_{m_i}) = \frac{L_w}{L_m} L_{m_i} = \begin{array}{l}\text{number of women that would be in indus-}\\ \text{try (occupation) i if the proportion}\\ \text{were the same in each of them}\end{array}$$

$$C_w = \sum_{L_{w_i} > L_{w_i}^e} (L_{w_i} - L_{w_i}^e) = \begin{array}{l}\text{number of women who would have to change}\\ \text{jobs in order to be evenly represented}\\ \text{in all industries (occupations)}\end{array}$$

$$I = \frac{C_w}{L_w} = \text{index of concentration}$$

The extreme values of this index are 0 and 1.0 respectively. If women constituted the same percentage in all sectors, none would have to move in order to achieve proportional representation. If, on the other hand, all women were in one sector in which they constitute 100 percent of the work force, all women would have to change jobs.

Table 6, Column (3) shows the degree of concentration by industry for the group of selected countries, ranked in order of the percentage of the labor force that is female and Column (6) shows the same measure based on data excluding "agriculture, forestry, hunting and fishing". In general, the lower the female proportion of the labor force, the more highly concentrated are women in the "women's" industries. The correlation between percent women in the labor force and our measure of concentration for the total labor force is -.818 and even with "agriculture..." taken out it is -.625.

Let L_{w_i} = number of women in industry (occupation) i

        L_{m_i} = number of men in industry (occupation) i

        $L_i = L_{w_i} + L_{m_i}$

        L_w = total·number of women in the labor force

        L_m = total number of men in the labor force

        $L = L_w + L_m$

Then $\dfrac{L_w}{L}$ = proportion of the labor force that is female

        $L_{w_i}^e = P_w L_i$ = number of women that would be in industry (occupation) i
                    if the proportion were the same for each of them

        $C_w =$ $(L_{w_i} - L_{w_i}^e)$ = number of women who would have to change
                            jobs in order to be evenly represented
                            in all industries (occupations)

        $I \sum = \dfrac{C_w}{L_w}$ = index of concentration

The extreme values of this equation are 0 and 100 respectively. If women constituted the same percentage in all sectors, none would have to move in order to achieve proportional representation. If, on the other hand, all women were in one sector in which they constitute 100 percent of the work force, all women would have to change jobs.

Table 6, Column (3) shows the degree of concentration by industry for the group of selected countries, ranked in order of the percentage of the labor force that is female and Column (6) shows the same measure based on data excluding "agriculture, forestry, hunting and fishing". In general, the lower the female proportion of the labor force, the more highly concentrated are women in the "women's" industries. The correlation between percent women in the labor force and our measure of concentration for the total labor force is -.818 and even with "agriculture..." taken out it is -.625.

Table 6

Percentage of Women in Labor Force and Index of Concentration
by Industry of Women in Labor Force, with
and without Agriculture, Forestry, Hunting and Fishing*

(1) Country	(2) Percent of women in total labor force	(3) Index of concentration of women in total labor force	(4) Country	(5) Percent of women in labor force excluding agriculture, forestry, hunting, and fishing	(6) Index of concentration of women in labor force excluding agriculture, forestry, hunting and fishing
Algeria	4.4	44.3	Libya	6.9	31.7
Libya	5.1	43.0	Algeria	7.7	49.3
U.A.R.	7.9	25.5	U.A.R.	10.3	34.6
Costa Rica	16.3	53.2	Liberia	12.3	35.4
Br. Honduras	18.1	45.7	India	20.6	12.0
Argentina	21.8	28.6	Italy	24.2	22.7
Spain	24.0	18.5	Argentina	25.2	26.6
Italy	24.8	16.2	Spain	25.4	23.3
Israel	29.6	21.5	Br. Honduras	26.6	36.7
India	31.5	9.5	Botswana	27.1	35.3
Philippines	32.1	25.6	Israel	33.0	17.9
Canada	32.3	23.4	Hungary	33.6	19.3
Sweden	33.6	26.1	Canada	33.8	21.7
Hungary	35.1	12.2	Costa Rica	33.8	34.4
Liberia	36.0	13.4	Japan	34.9	12.8
U.S.	36.3	19.8	Sweden	35.1	26.6
Ghana	38.2	13.7	Bulgaria	35.5	16.0
Bahamas	38.7	24.7	Bolivia	36.5	21.4
Japan	38.9	12.8	Austria	36.6	19.5
Finland	39.4	11.3	U.S.	37.1	19.1
Austria	40.4	17.9	Thailand	37.2	14.2
Czechoslovakia	41.0	12.6	Czechoslovakia	38.2	12.8
Bulgaria	44.0	12.7	Bahamas	40.6	24.7
Thailand	48.4	4.7	Ghana	40.7	27.4
Botswana	49.9	4.3	Finland	41.6	23.9
Bolivia	50.9	6.8	Philippines	46.7	15.1

*Based on data in U.N. Yearbook of Labor Statistics, 1970

Table 7 shows concentration by occupation, computed in the same way as above, and the relationship is similar to that observed in Table 6. The correlation between the percentage of women in the labor force and the degree of concentration in occupations is -.716. The rank correlation between the two measures of concentration is as high as .862.

On the basis of this evidence it would be expected that the occupational distribution of women would become less differentiated from that of men as more women move into the labor force. Historical data show that this has been the case in the U.S. Nevertheless, the degree of occupational segregation that remains is substantial.

It must be emphasized that large categories are used in this study and much occupational segregation may exist within particular categories. If the same formula were, for instance, applied to the detailed occupational categories available in the U.S. Census data, a far larger proportion of women would need to change jobs to duplicate the occupational pattern of the total labor force.

Education. In Table 8 data on education are compared with the proportion of women in the total labor force excluding "agriculture, forestry, fishing and hunting." This category is excluded because in many countries it is largely a subsistence sector, and hence there is little reason to assume any interrelation between participation in that sector and education. The positive correlation across countries between education and participation in the labor force may be due to the fact that educated women are likely to use education in the labor market and/or that societies which think highly enough of women to educate them are also less likely to discriminate against them in the labor market.

Table 7

Percentage of Women in Labor Force and Concentration
by Occupation of Women in the Labor Force[*]

Country	Percent of women in total labor force	Concentration of women in total labor force
Algeria	4.4	37.0
Libya	5.1	36.1
UAR	7.9	24.9
Costa Rica	16.3	48.6
British Honduras	18.1	46.7
Agentina	21.8	31.0
Italy	24.8	31.0
Israel	29.6	35.5
India	31.5	9.6
Philippines	32.1	18.7
Canada	32.3	21.9
Sweden	33.6	28.9
Hungary	35.1	17.3
Liberia	36.0	14.5
U.S.	36.3	28.6
Ghana	38.2	13.9
Japan	38.9	14.5
Finland	39.4	19.3
Austria	40.4	21.8
Czechoslovakia	41.0	19.1
Bulgaria	44.0	15.6
Thailand	48.4	4.9
Botswana	49.9	5.0

[*] Based on data in U.N. Yearbook of Labor Statistics, 1970.

Table 8

Percent of Females among Students
and in Labor Force*

Country	Percent of women in labor force excluding agriculture, forestry, hunting and fishing	Percent females of all students	Percent females in higher education
Libya	6.9	31.7	11.0
Algeria	7.7	36.6	22.5
U.A.R.	10.3	36.0	25.7
Liberia	12.3	31.6	21.5
India	20.6	37.3	21.3
Argentina	25.2	49.5	41.6
Spain	25.4	46.9	24.6
Br. Honduras	26.6		75.3 #
Botswana	27.1	52.6	
Israel	33.0	48.5	43.0
Hungary	33.6	46.4	44.5
Canada	33.8	46.6	39.1
Costa Rica	33.8	48.9	41.8
Japan	34.9	47.2	28.2
Sweden	35.1	48.3	37.4
Bulgaria	35.5	48.4	48.5
Bolivia	36.5	41.9	29.4
Austria	36.6	47.0	28.9
U.S.	37.1		40.7
Thailand	37.2	46.6	42.0
Czechoslovakia	38.2	49.6	37.6
Bahamas	40.6	51.7	71.4 ##
Ghana	40.7	42.0	11.7
Finland	41.6	49.8	48.7
Philippines	46.7	49.1	55.4

*Based on data in UN Yearbook of Labor Statistics, 1970
#Total number is 63
##Total number is 252

The correlation of the percentage of the labor force that is female and the percentage of all students that is female is r = .787; the correlation with the percentage of students in higher education that is female is only r = .498. However, the latter correlation increases to r = .631 when the two countries with extremely small numbers of students (252 in the Bahamas and 63 in British Honduras) are excluded. In any case, it is not unreasonable to assume that factors other than women's participation in the labor force influence the extent of women's participation in education, especially in higher education. One reasonable hypothesis is that the education of women is to some extent viewed as a consumer's good. This would explain why some relatively wealthy countries educate an unexpectedly large proportion of women as compared to women's participation in the labor force. Examples of this are Argentina, Israel and Spain. It is also very likely that a larger proportion of men from these countries study abroad. On the other hand, women receive relatively little education in very poor countries such as Bolivia and Ghana, and fewer men can afford to go abroad.

For the U.S. the most recent data indicate that the average level of education for men and women is now equal (Table 9). The patterns for the two groups are somewhat different, however. A larger proportion of men drop out with little schooling and a larger proportion complete four years of college. The disparity becomes greatest for graduate study.

Table 10 shows the mean educational level for men and women by occupation. The mean for all working women is slightly higher than for men since women with more education tend to have a higher rate of participation in the labor force. Men are more highly educated in six categories, women in three, and both are equal in one category. The most interesting fact

Table 9

Percent of Men and Women in the Labor Force with Various Levels of Schooling

Level of schooling	Percent of men	Percent of women
Elementary School		
Less than 5 years	3.2	2.0
5-7 years	7.3	5.0
8 years	9.7	7.2
High School		
1-3 years	21.5	20.9
4 years	31.6	40.9
College		
1-3 years	13.0	13.5
4 years	7.1	6.8
5 or more years	6.7	3.7
Total	100.0	100.0

Source: U. S. Department of Commerce, Bureau of the Census, 1970 Census, Earnings by Occupations and Education

Table 10

Mean Education of Men and Women
16 Years and Older by Occupation

Occupation	Mean years of education of men	Mean years of education of women
Professional, technical and kindred workers	15.5	14.9
Managers and administrators, exc. form	13.0	12.3
Sales workers	12.6	11.4
Clerical and kindred workers	12.1	12.1
Craftsmen and kindred workers	10.6	10.7
Operatives and kindred workers, exc. transport, equipt. oper.	10.1	9.8
Transportation equipment operatives	10.1	10.8
Laborers	9.6	10.1
Farm workers	9.4	9.3
Service workers	10.3	10.1

Source: U.S. Department of Commerce, Bureau of the Census,
          1970 Census, Occupation by Industry

emerging from these data is that women are relatively highly educated in occupations where additional schooling is not highly rewarded, and vice versa for men. Table 11 shows the difference between men's and women's mean years of schooling and the percentage earned by men with some graduate work as compared to those with only grade school.

Ratio of Women's to Men's Earnings. Data on the average earnings of fully employed men and women are not available for many countries. There is however, information for a number of countries on earning of men and women in manufacturing.* Data for a single sector have the advantage of being more comparable, since one of the factors that greatly influences the relative earnings of women is the extent to which their distribution between sectors differs from that of men. Table 12 shows women's earnings in manu-facturing as a percentage of the earnings of men for 1953 and 1971 for all countries for which they are given as well as the proportion of women in manufacturing and in the labor force whenever this information was available. While in all countries women earn less than men, the differences are large in some cases and modest in others.

Various possible explanations suggest themselves for these wide vari-ations, but none of the ones we tested were supported by the facts. A high growth rate is found in some countries where the gap between men's and women's earnings is very small, such as Sweden, but Burma with a very low growth rate has an even smaller differential. We also found that a rapid growth in women's relative earnings is as likely to be found in countries with a low growth rate as in countries that experienced rapid growth.

There is no discernable relation between the level of women's earn-

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*U.N. Statistical Yearbook, 1972 (U.S. data are taken from the Census).

Table 11

Difference Between Mean Years of Schooling of Men and
Women and the Earnings Differential Between
Uneducated and Highly Educated, by Occupation*

Occupation	Excess of mean number of years of schooling of women compared to men	Index of earnings of men with some graduate works. (Earnings of men with grade school education = 100.)
Sales workers	-1.2	186.2
Managers and admin. exc. form	- .7	183.2
Professional, technical and kindred workers	- .6	181.8
Operatives and kindred workers, exc. transp. equip. oper.	- .3	142.0
Service workers	- .2	187.2
Farm workers	- .1	167.8
Clerical and kindred workers	0	162.9
Craftsmen and kindred workers	+ .1	166.4
Laborers	+ .5	135.3
Transportation equipment workers	+ .7	127.7

*Based on data in U.S. Department of Commerce, Bureau of the Census, 1970 Census, Earnings by Occupation and Education, Occupation by Industry

Table 12

Earnings of Women as Percentage of Earnings of Men in Manufacturing,
Proportion of Women in Manufacturing and in the Labor Force
in Various Countries

Country	W/M earnings in manufacturing (1)		W/M in manufac- turing (2)	W/M in labor force (2)
	1953	1971		
U.S.	56.1[4]	55.5[4]	28.7	36.3
Ireland	56.8	56.5	31.5	25.9
U.K.	60.0	58.5	31.4	35.7
Belgium	57.3	64.1	25.7	32.7
Greece	62.7#	66.4	31.8	32.8
Egypt	61.1#	67.7*	3.5	7.9
Switzerland	70.8	69.0	27.4	30.1
West Germany	62.8	70.1	29.8	35.9
Finland	67.7	70.8	37.0	39.4
Netherlands	58.1	72.1	16.3	22.3
Australia	71.0	72.9	24.7	29.5
Norway	69.5#	75.4	18.9	22.9
Denmark	64.6	76.6	27.0	32.3
El Salvador	73.3#	78.1	33.1	17.8
Sweden	69.1	81.4	23.6	33.6
Burma[3]	55.1	83.8**	(3)	(3)
Kenya[3]	79.0#	92.5***	(3)	(3)

(1) Derived from data in U.N. Statistical Yearbook, 1972

(2) Derived from data in U.N. Yearbook of Labor Statistics, 1970

(3) Data not available

(4) Based on data in U.S. Department of Commerce, Bureau of the Census,
     1970 Census, Occupation by Industry

*1968

**1970

***1966

#1963

ings relative to men's and the level of economic development. The U.S., with highest per capita income, has the lowest ratio of women's to men's earnings. Sweden, with the second highest income, ranks third highest. Also there is no relationship between the ratio of women's to men's earnings and the proportion of women either in the manufacturing sector or in the total labor force. For instance, Egypt, with the lowest percentage of women in either category ranks twelfth, Finland with the highest proportion ranks ninth.

Two striking facts about the U.S. emerge:

1. women earn relatively less in the U.S. than in any other country in this group;

2. the U.S. is one of only four countries where women's income declined relative to that of men between 1953 and 1971. In the other thirteen countries women have been closing the gap, in five of them by more than ten percentage points.

The fact that women's incomes in the U.S. have been declining in recent years relative to those of men is often explained by the heavy influx of women, and particularly married women, into the labor force which presumably depresses incomes. The high earnings of women in countries which have an almost equally large proportion of women in the labor force, and a larger proportion of women in manufacturing, casts considerable doubt on this hypothesis. A more plausible conjecture may be that in some countries the willingness of women to enter the labor force increases, raising the supply, while prejudice in society against hiring them on equal terms continues to linger, thus depressing demand. In countries where women, for whatever, reason, are much less likely to enter the labor force at all, there may be a more favorable balance of supply and demand. This might explain the puzzling fact that women earn relatively higher incomes in Egypt and El Salvador than in the U.S.

The other phenomenon which requires explanation is the rather rapid

closing of the gap between men's and women's incomes in many of the countries.

The various factors which explain part of the differential in the U.S., such

as shorter hours, interrupted careers, greater preference for working closer

to home, possibly less training, exist in other countries also, and in

some cases women have less education as well. These conditions no doubt help

to explain why women in all countries for which we have data earn less than

men. But, there is no evidence that there has been any rapid change anywhere

in this respect (except that women in Sweden and Finland are now far less

likely to leave the labor force during child bearing years*). Furthermore,

there is reason to believe that such strongly entrenched, basic behavior

patterns do not change rapidly.

The more likely explanation therefore is that legislation and ideo-

logical pressures for equality have succeeded in doing away with that portion

of the differential that was based on nothing more solid than prejudice. It

will be interesting to see if the women's liberation movement and the civil rights

legislation of recent years will have the same results in the U.S.

Conclusion

The data presented and analyzed in this paper enable us to offer answers

to the questions raised in the introductory section.

1. Women participate in the labor force to an extent virtually equal

   with men in at least some countries. Women constitute a widely

   varying proportion of the labor force, ranging from less than 5%

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* Marjorie Galenson, Women and Work, pp. 16-17.

to more than 50%.

2. There is great variation in the male-female pattern of industries and occupations of different countries.

3. The concentration of women in "female" sectors tends to decrease as the proportion of women in the labor force increases.

4. Women are less educated than men in most countries, but not in the U.S. In this country, however, women tend to have less schooling in those occupations where education is highly rewarded.

5. The ratio of women's to men's earnings varies widely in different countries, and in some cases has varied rapidly within countries.
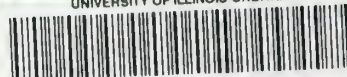
Thus, one may conclude that, while there may be some inherent differences between men and women that are relevant to their economic status, there is strong evidence that these differences by no means explain all or even most of the continued inferior status of women in the U.S. Furthermore, the evidence shows that the U.S. is far from being a leader in moving toward greater equality for women.

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